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(54) **TOUCH DISPLAY PANEL**

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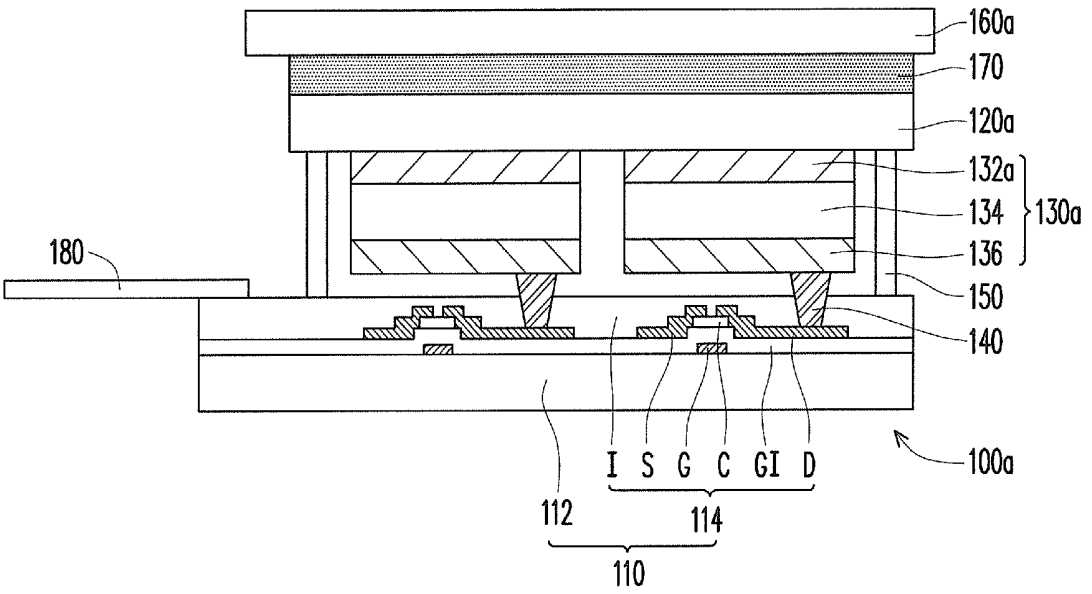
(57) **ABSTRACT**

A touch display panel including a array substrate, an opposite substrate, an organic light emitting diode (OLED) structure, a plurality of conductive spacers and a sealant is provided. The OLED structure is disposed on the opposite substrate and located between the array substrate and the opposite substrate. The OLED structure includes a first electrode layer, an organic light emitting layer and a second electrode layer which are sequentially disposed. The first electrode layer is located on the opposite substrate and includes a plurality of touch sensing electrode. The second electrode layer is electrically connected to the array substrate via the conductive spacers. The sealant is sealed the OLED structure and the conductive spacers between the array substrate and the opposite substrate.



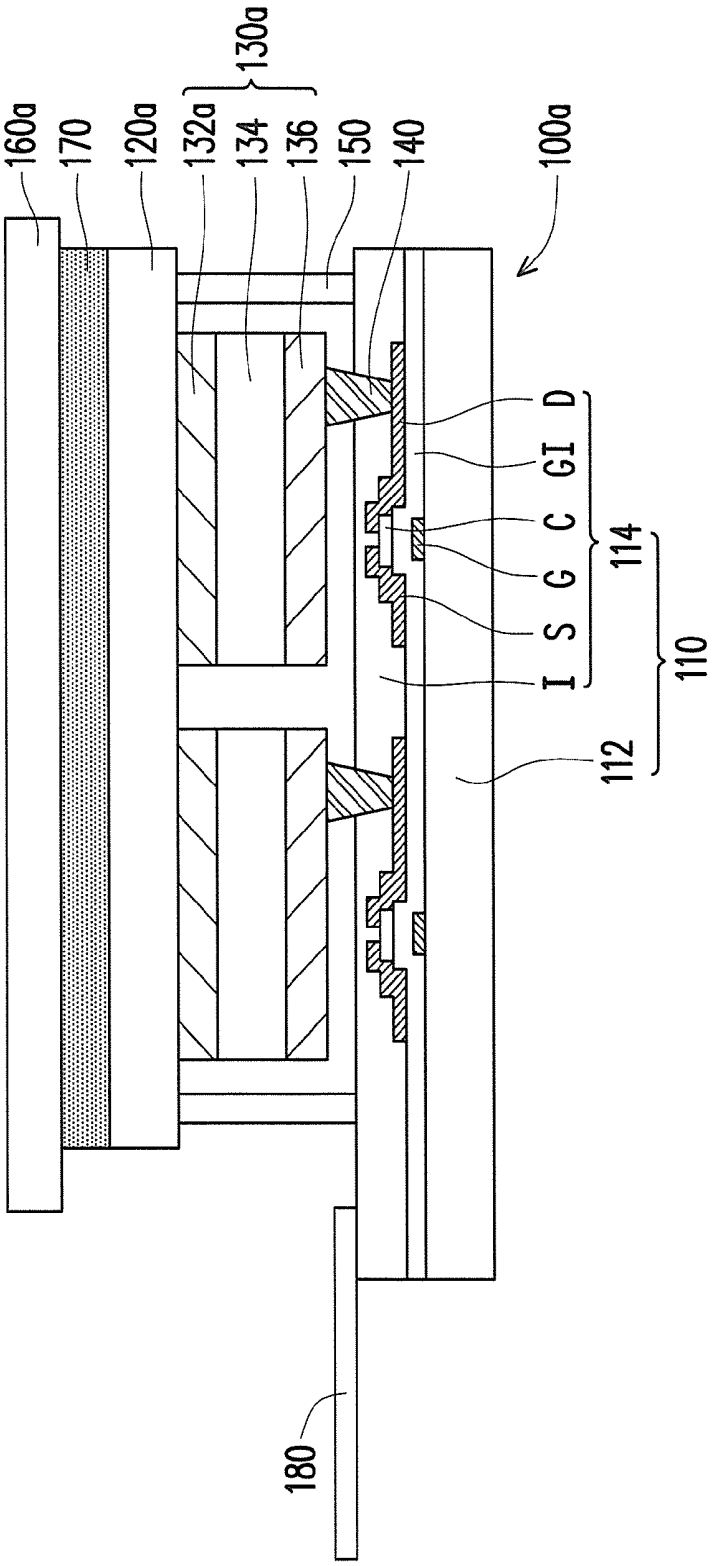

160a
170
120a
132a
134
136
130a
150
140
100a
D
GI
C
G
S
I
114
110
112
180

FIG. 1A

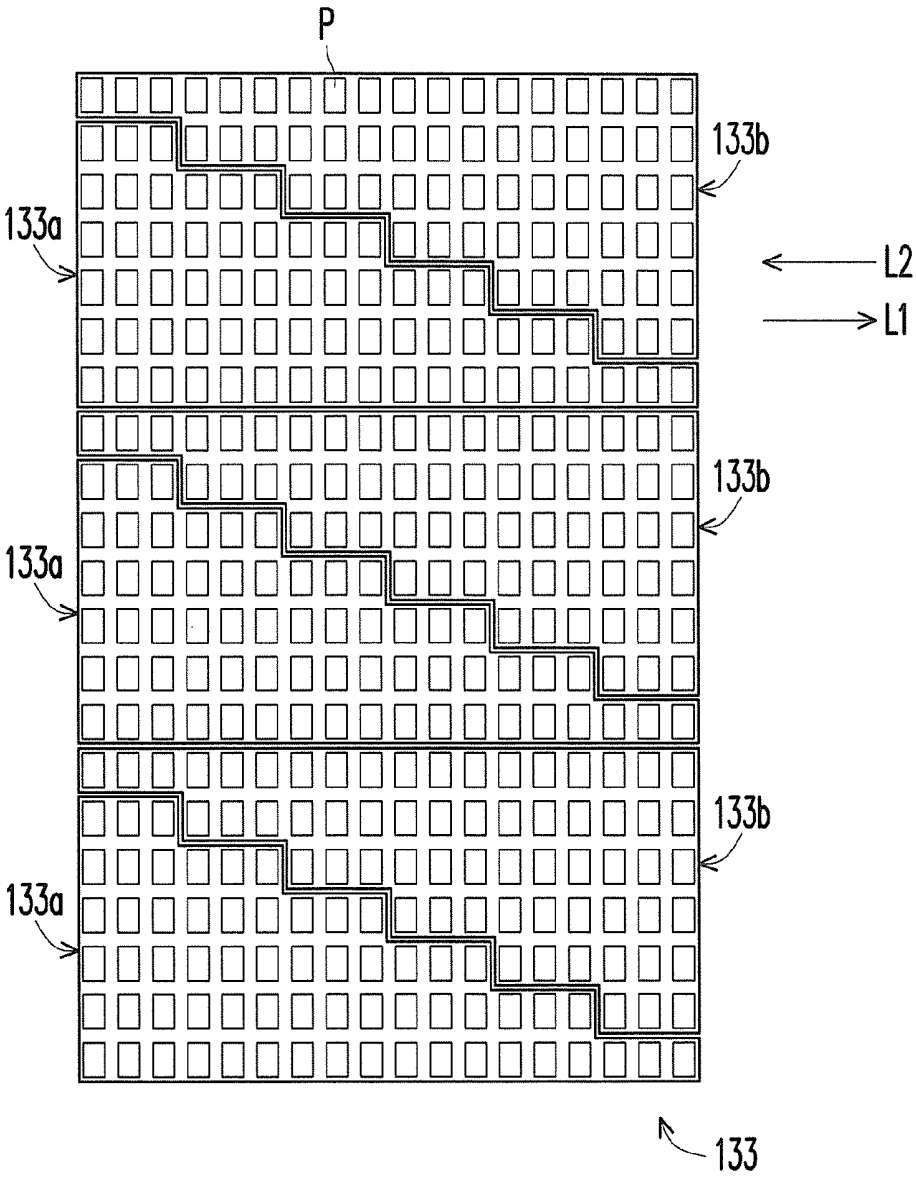


FIG. 1B

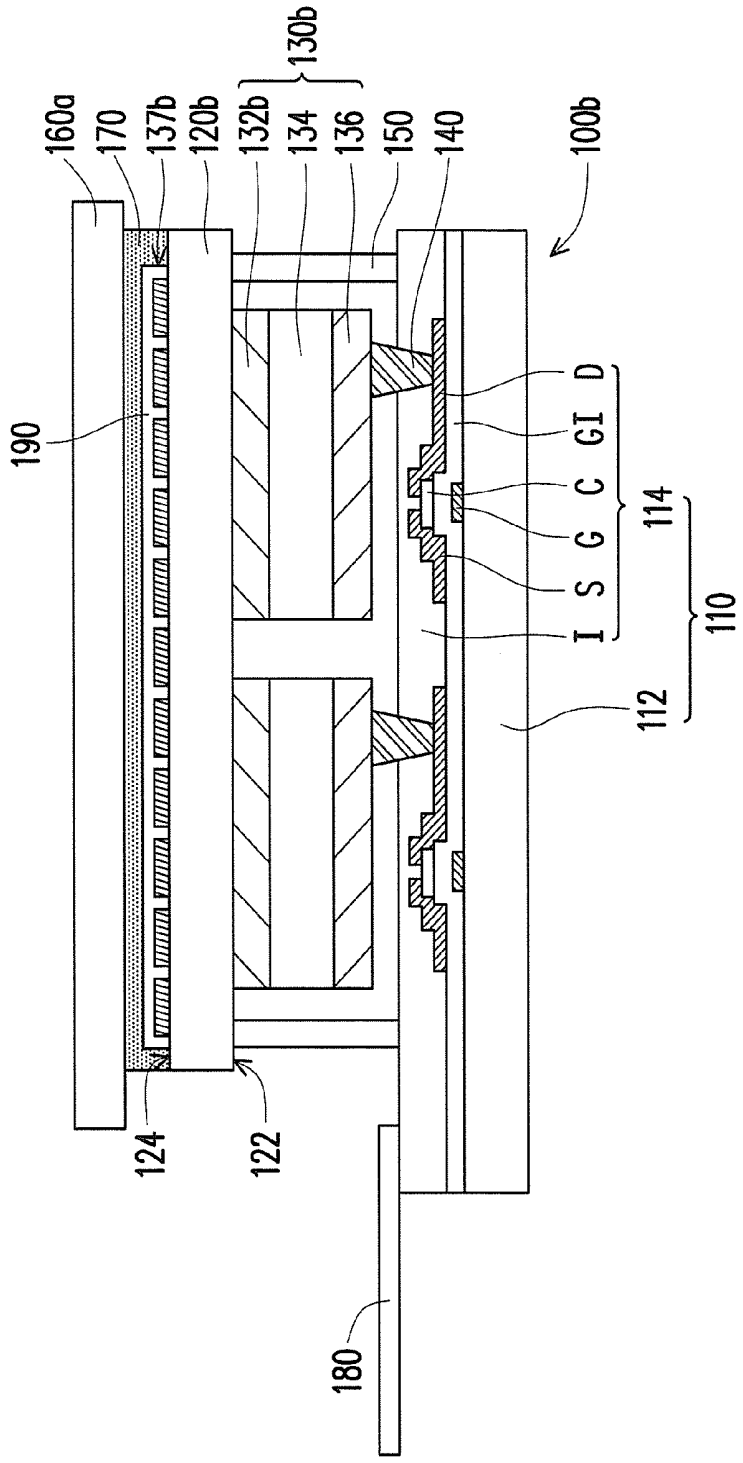

160a
170
137b
120b
132b
134
136
150
140
130b
100b
190
D
GI
C
G
S
I
114
110
112
124
122
180

FIG. 2A

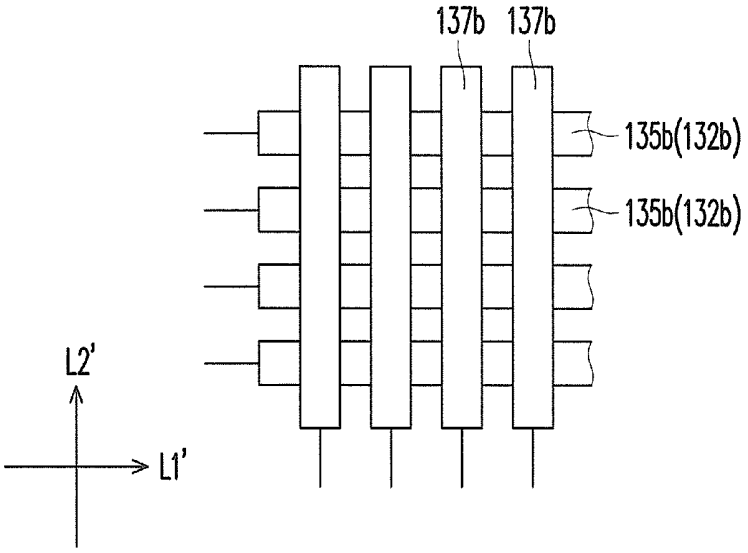

137b
137b
135b(132b)
135b(132b)
L2'
L1'

FIG. 2B

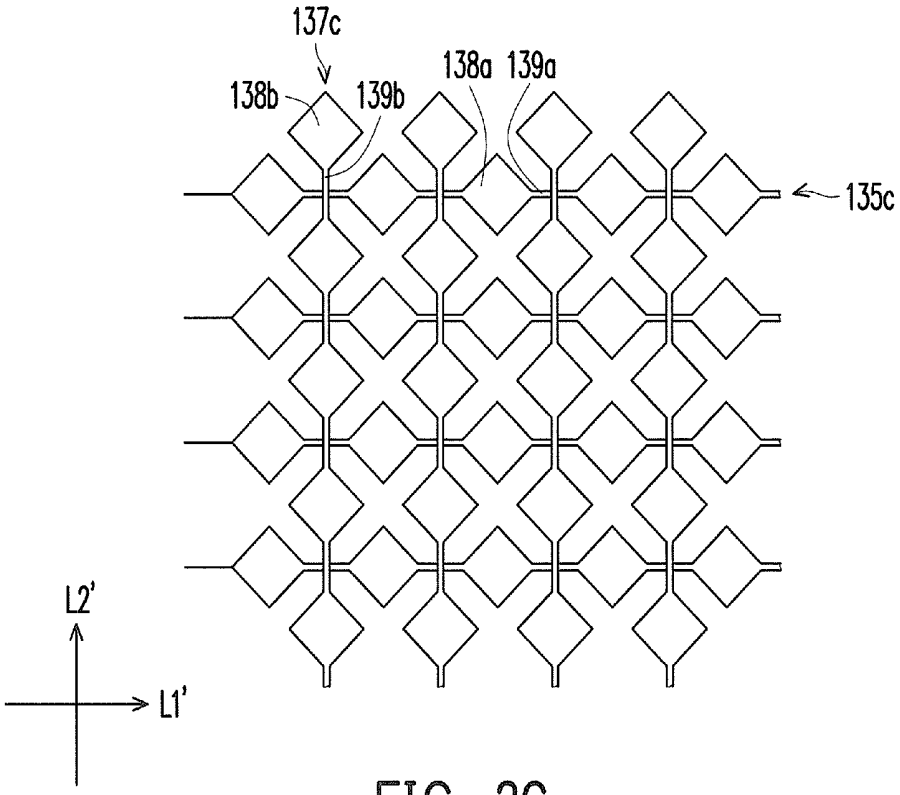

137c
138b
139b
138a
139a
135c
L2'
L1'

FIG. 2C

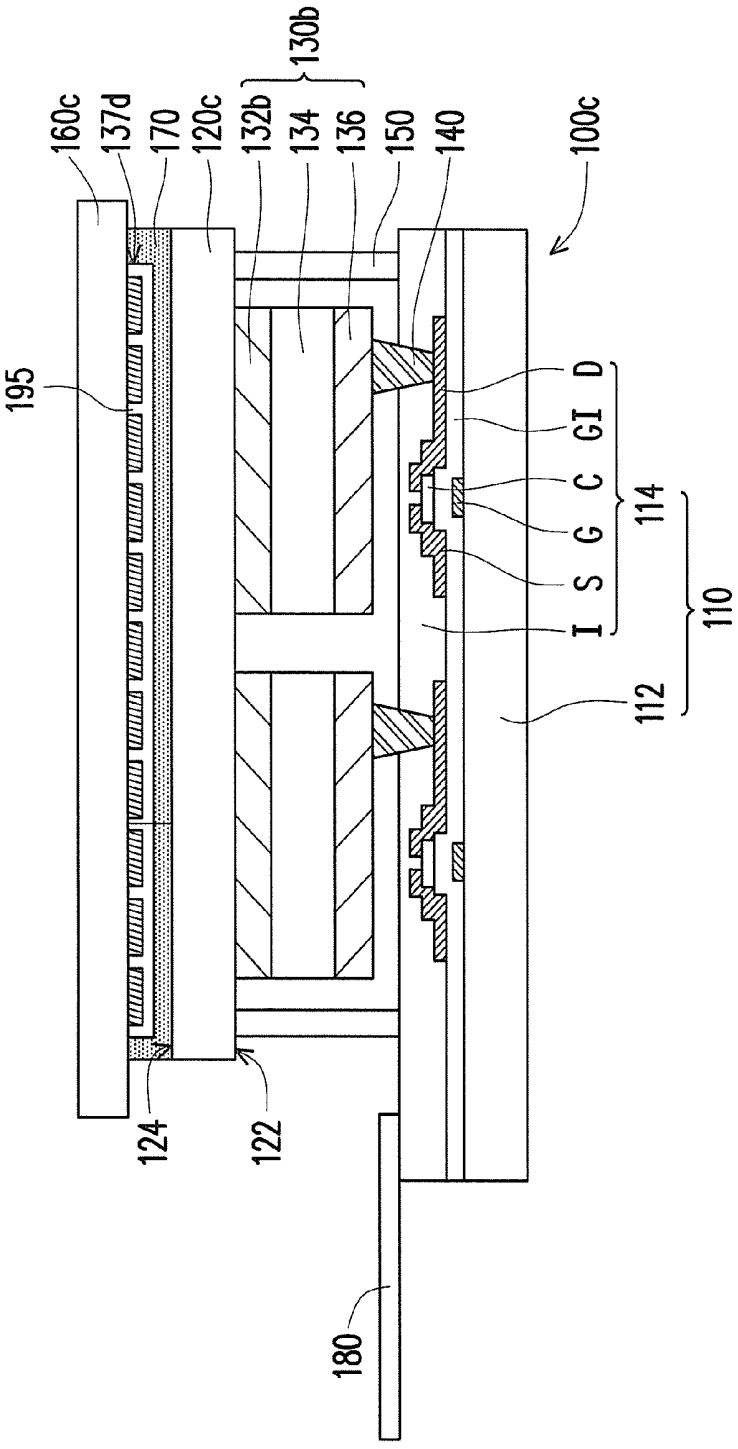

160c
137d
170
120c
132b
130b
134
136
150
140
100c
195
D
GI
C
G
S
I
114
110
112
124
122
180

FIG. 3

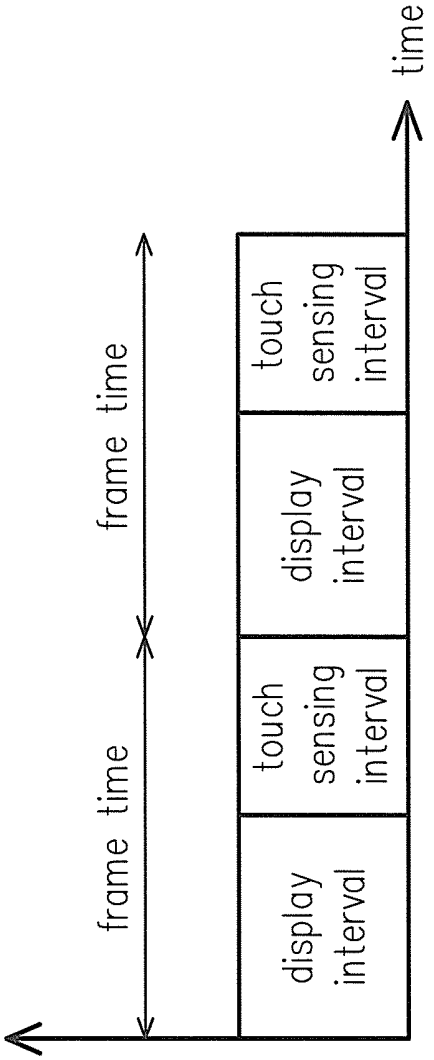

time
frame time
frame time
display interval
touch sensing interval
display interval
touch sensing interval

FIG. 4

TOUCH DISPLAY PANEL

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority benefit of Taiwan application serial no. 101117246, filed on May 15, 2012. The entirety of the above-mentioned patent application is hereby incorporated by reference herein and made a part of this specification.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention generally relates to a touch display panel, and more particularly, to a touch display panel in which organic light emitting layer is used to display.

[0004] 2. Description of Related Art

[0005] In general, a conventional touch display device is a display panel externally assembled with an independent touch panel. Therefore, the conventional touch display device is comparatively thicker and heavy. In addition, the design of externally assembling the touch panel to the display panel may easily cause the degradation of transmittance. Thus, if the touch sensing function can be directly integrated in a display device, then the aforementioned problem may be effectively resolved.

SUMMARY OF THE INVENTION

[0006] The present invention provides a touch display panel which uses an organic light emitting diode structure to display, wherein the first electrode layer of the organic light emitting diode structure includes the touch sensing electrodes. Thus, the touch display panel can have the functions of touch sensing and displaying without needing to greatly increase the thickness.

[0007] The present invention provides a touch panel including an array substrate, an opposite substrate, an organic light emitting structure, a plurality of conductive spacers and a sealant. The opposite substrate is located opposite to the array substrate. The organic light emitting diode structure is disposed on the opposite substrate and located between the array substrate and the opposite substrate. The organic light emitting diode structure includes a first electrode layer, an organic light emitting layer and a second electrode layer. The first electrode layer is disposed on the opposite substrate and includes a plurality of touch sensing electrodes. The organic light emitting layer is disposed on the first electrode layer. The second electrode layer is disposed on the organic light emitting layer. The conductive spacers are disposed between the array substrate and the organic light emitting diode structure. The second electrode layer of the organic light emitting diode structure is electrically connected to the array substrate through the conductive spacers. The sealant is disposed between the array substrate and the opposite substrate for sealing the organic light emitting diode structure and the conductive spacers between the array substrate and the opposite substrate.

[0008] According to one exemplary embodiment of the present invention, the touch sensing electrodes include a plurality of first sensing electrodes and a plurality of second sensing electrodes. The first sensing electrodes extend along a first direction, and the second sensing electrodes extend along a second direction and electrically insulated with the first sensing electrodes. The first direction is opposite to the second direction. The shape of each of the first sensing electrodes and the shape of each of the second sensing electrodes are ladder-shaped structures, and the shape of each of the first sensing electrodes and the shape of adjacent second sensing electrodes construct a rectangular structure.

[0009] According to one exemplary embodiment of the present invention, wherein the touch sensing electrodes are a plurality of first sensing series. The touch display panel further includes a plurality of second sensing series. The opposite substrate has a first surface and a second surface opposite to each other. The first sensing series and the second sensing series are located on the first surface and the second surface of the opposite substrate, respectively. The first sensing series extend along a first direction and the second sensing series extend along a second direction, wherein the first direction intersects the second direction.

[0010] According to one exemplary embodiment of the present invention, each of the first sensing series includes a first stripe electrode, and each of the second sensing series includes a second stripe electrode.

[0011] According to one exemplary embodiment of the present invention, each of the first sensing series includes a plurality of first sensing pads and a plurality of first bridge lines connecting the first sensing pads in series along the first direction, and each of the second sensing series includes a plurality of second sensing pads and a plurality of second bridge lines connecting the second sensing pads in series along the second direction.

[0012] According to one exemplary embodiment of the present invention, the touch display panel further includes a cover plate and a plurality of second sensing series. The cover plate is disposed on the opposite substrate. The second sensing series are disposed on the cover plate and located between the cover plate and the opposite substrate. The touch sensing electrodes of the first electrode layer of the organic light emitting diode structure are a plurality of first sensing series. The first sensing series extend along a first direction and the second sensing series extend along a second direction, wherein the first direction intersects the second direction.

[0013] According to one exemplary embodiment of the present invention, wherein each of the first sensing series includes a first stripe electrode, and each of the second sensing series includes a second stripe electrode.

[0014] According to one exemplary embodiment of the present invention, each of the first sensing series includes a plurality of first sensing pads and a plurality of first bridge lines connecting the first sensing pads in series along the first direction, and each of the second sensing series includes a plurality of second sensing pads and a plurality of second bridge lines connecting the second sensing pads in series along the second direction.

[0015] According to one exemplary embodiment of the present invention, the touch display panel further includes a cover plate disposed on the opposite substrate, wherein the cover plate is fixed on the opposite substrate through an adhesive layer.

[0016] According to one exemplary embodiment of the present invention, the touch display panel further includes a flexible circuit board disposed on the drive device array substrate and electrically connected to the array substrate.

[0017] In light of the above, since the first electrode layer of the organic light emitting diode structure of the present invention includes the touch sensing electrodes, an extra touch panel or an independent touch sensing electrode structure is

not required to be additionally disposed, and the touch display panel can have the functions of touch sensing and displaying. Therefore, the touch display panel of the present invention can effectively reduce the thickness and the weight, and the light transmittance can also be improved. In addition, since the first electrode layer and the touch sensing electrodes which are the displaying structures are formed in the same fabricating process, the fabricating process and the manufacturing cost can be effectively reduced and the circuit layouts can be simplified.

[0018] In order to make the aforementioned and other features and advantages of the invention more comprehensible, embodiments accompanying figures are described in detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The accompanying drawings constituting a part of this specification are incorporated herein to provide a further understanding of the invention. Here, the drawings illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

[0020] FIG. **1**A schematically shows a cross-sectional view of a touch display panel according to an exemplary embodiment of the present invention.

[0021] FIG. **1**B illustrates a top view of the touch sensing electrodes in FIG. **1**A.

[0022] FIG. **2**A schematically shows a cross-sectional view of a touch display panel according to another exemplary embodiment of the present invention.

[0023] FIG. **2**B illustrates a top view of portions of the first sensing series and the second sensing series in FIG. **2**A according to an exemplary embodiment.

[0024] FIG. **2**C illustrates a top view of portions of the first sensing series and the second sensing series in FIG. **2**A according to another exemplary embodiment.

[0025] FIG. **3** schematically shows a cross-sectional view of a touch display panel according to another exemplary embodiment of the present invention.

[0026] FIG. **4** is a schematic view illustrating a distribution of a display interval and a touch sensing interval wherein the touch display panel of FIG. **1**A is in two frame times.

DESCRIPTION OF EMBODIMENTS

[0027] FIG. **1**A schematically shows a cross-sectional view of a touch display panel according to an exemplary embodiment of the present invention. FIG. **1**B illustrates a top view of the touch sensing electrodes in FIG. **1**A. Referring to FIG. **1**A, in the embodiment, the touch display panel **100***a* includes an array substrate **110**, an opposite substrate **120***a*, an organic light emitting structure **130***a*, a plurality of conductive spacers **140** and a sealant **150**.

[0028] In more detailed, the array substrate **110** is an active device array substrate including a substrate **112** and a plurality of active devices **114**. Each of the active devices **114** includes a gate G, a gate insulating layer GI, a channel layer C, a source S, a drain D and an insulating layer I, for example. Herein the gate G is located on the substrate **112**, and the gate insulating layer GI, the channel layer C, the source S/drain D and the insulating layer I are sequentially stacked on the substrate **112**. In other embodiments not shown in the figures, the array substrate **110** may be a passive device array substrate, for example. In other words, the driving method of the array substrate **110** is not limited to be active or passive in the present invention. The opposite substrate **120***a* is located opposite to the array substrate **110**, wherein the opposite substrate **120***a* is a transparent substrate, and the material is glass, for example.

[0029] The organic light emitting diode structure **130***a* is disposed on the opposite substrate **120***a* and located between the array substrate **110** and the opposite substrate **120***a*. The organic light emitting diode structure **130***a* includes a first electrode layer **132***a*, an organic light emitting layer **134** and a second electrode layer **136**, wherein the first electrode layer **132***a* is a cathode and the second electrode layer **136** is an anode, for example. The organic light emitting layer **134** is disposed on the first electrode layer **132***a*, and the second electrode layer **136** is disposed on the organic light emitting layer **134**. In addition, the first electrode layer **132***a* may be the transparent electrode, so that the light emitted by the organic light emitting layer **134** may be emitted toward the opposite substrate **120***a*, for example. Certainly, both the first electrode layer **132***a* and the second electrode layer **136** may be the transparent electrodes, so that the light emitted by the organic light emitting layer **134** may be emitted toward the array substrate **110** and the opposite substrate **120***a* at the same time, for example. Namely, the touch display panel **100***a* of the embodiment may be a single-sided display or a double-sided display, for example.

[0030] Particularly, referring to FIG. **1**A and FIG. **1**B together, in the fabricating process, the first electrode layer **132***a* of the embodiment is firstly formed on the opposite substrate **120***a* through a photomask, and simultaneously, in the same fabricating process, a plurality of touch sensing electrodes **133**, such as capacitance touch sensing electrodes, are formed, for example. In other words, the first electrode layer **132***a* of the embodiment include a plurality of touch sensing electrodes **133**, and the touch sensing electrodes **133** can substantially be deemed as touch sensing electrodes which are arranged in a single layer. As shown in FIG. **1**B, the touch sensing electrodes **133** include a plurality of first sensing electrodes **133***a* and a plurality of second sensing electrodes **133***b*, wherein the first sensing electrodes **133***a* extend along a first direction L**1**, and the second sensing electrodes **133***b* extend along a second direction L**2** and electrically insulated with the first sensing electrodes **133***a*. Herein, the first direction L**1** is opposite to the second direction L**2**. It has to be noted that, in the embodiment, the shape of each of the first sensing electrodes **133***a* and the shape of each of the second sensing electrodes **133***b* are ladder-shaped structures, more specifically, right triangles each having a ladder-shaped hypotenuse. Moreover, each of the first sensing electrodes **133***a* and each of the second sensing electrodes **133***b* of the embodiment include a plurality of pixels P. The first sensing electrodes **133***a* and the second sensing electrodes **133***b* are separated through a photomask or by setting a separating structure, so that each of the distributed regions of first sensing electrodes **133***a* and each of the distributed regions of second sensing electrodes **133***b* which are separated include a plurality of pixels P. Certainly, in other embodiments not shown in the figures, the first sensing electrodes **133***a* and the second sensing electrodes **133***b* can also be other shapes of single-layered sensing electrodes, such as single-layered sensing electrodes including a plurality of strip sensing electrodes, array single-layered sensing electrodes including a plurality of rectangular sensing electrodes, or single-layered sensing electrodes including any other polygonal sensing electrodes, which still falls within the technical schemes

adopted by the present invention without departing from the scope of the present invention. Then, after the first electrode layer **132***a* is formed, the organic light emitting layer **134** and the second electrode layer **136** are sequentially Ruined, in order to form the organic light emitting diode structure **130***a*.

[0031] The conductive spacers **140** are disposed between the array substrate **110** and the organic light emitting diode structure **130***a*, wherein the second electrode layer **136** of the organic light emitting diode structure **130***a* is electrically connected to the array substrate **110** via the conductive spacers **140**. More specifically, the second electrode layer **136** of the organic light emitting diode structure **130***a* is electrically connected to the drain D of the active device **114** of the array substrate **110** through the conductive spacers **140**. The sealant **150** is disposed between the array substrate **110** and the opposite substrate **120***a*, so as to enable the organic light emitting diode structure **130***a* and the conductive spacers **140** to be lain between the array substrate **110** and the opposite substrate **120***a*. The sealant is ultraviolet (UV) light hardening resin, thermosetting resin, frits or the like.

[0032] In addition, the touch display panel **100***a* further includes a cover plate **160***a* and a flexible circuit board **180**. The cover plate **160***a* is disposed on the opposite substrate **120***a*, wherein the cover plate **160***a* is fixed on the opposite substrate **120***a* through an adhesive layer **170** for protecting the opposite substrate **120***a*. Herein, the material of the cover plate **160** is glass or plastic, and the material of the adhesive layer **170** is an optical adhesive, for example. The flexible circuit board **180** is disposed on the array substrate **110** and electrically connected to the array substrate **110**, wherein the touch display panel **100***a* is electrically connected to an external circuit (not shown) through the flexible circuit board **180**.

[0033] In the embodiment, the organic light emitting diode structure **130***a* is used for display function in the touch display panel **100***a*, and the first electrode layer **132***a* of the organic light emitting diode structure **130***a* can provide the touch sensing function, wherein the touch sensing electrodes **133** are built in the first electrode layer **132***a* of the organic light emitting diode structure **130***a*. As a result, without needing an extra touch panel or an independent touch sensing electrode structure to be additionally disposed, the touch display panel **100***a* of the present embodiment can have the functions of touch sensing and displaying. Therefore, the touch display panel **100***a* can effectively reduce the thickness and the weight, and the light transmittance can also be enhanced. In addition, since the first electrode layer **132***a* and the touch sensing electrodes **133** are formed in the same fabricating process, the fabricating process and the manufacturing cost can be effectively reduced and the circuit layouts can be simplified. Moreover, since the organic light emitting diode structure **130***a* is disposed on the opposite substrate **120***a*, the first electrode layer **132***a* and the touch sensing electrodes **133** are comparatively closer to the touch sensing interface, and thus the sensitivity of touch sensing can be effectively increased. In addition, the first electrode layer **132***a* and the touch sensing electrodes **133** are comparatively farther from the array substrate **110**, and thus the noise problem of touch sensing signals can be effectively reduced.

[0034] It should be noted that, referring to FIG. **4**, since the first electrode layer **132***a* acts as display structure and touch sensing structure both, during the operating process of the touch display panel **100***a*, display timing and touch sensing timing are needed to be separated. That is, the frame time of each of the display image is divided into a display interval and a touch sensing interval. For instance, during the display interval, the first electrode layer **132***a* of the touch display panel **100***a* is 0V or negative voltage, and the second electrode layer **136** is the voltage of corresponding image data. At this time, during the touch sensing interval, the first electrode layer **132***a* is connected to the touch sensing signal, and the second electrode layer **136** is 0V.

[0035] The following exemplary embodiments of the present invention are illustrated with accompanied drawings, wherein the same or similar parts are denoted with same reference numerals, and repetitive descriptions are omitted. For a detailed description of this section, reference can be found in the first embodiment of the invention, therefore no further description is contained herein.

[0036] FIG. **2**A schematically shows a cross-sectional view of a touch display panel according to another exemplary embodiment of the present invention. FIG. **2**B illustrates a top view of portions of the first sensing series and the second sensing series in FIG. **2**A according to an exemplary embodiment. For the sake of description convenience, the opposite substrate located between the first sensing series and the second sensing series is omitted in FIG. **2**B. Referring to FIG. **2**A and FIG. **2**B, the touch display panel of the embodiment **100***b* is similar to the touch display panel **100***a* of FIG. **1**A, and the difference is that: the touch sensing electrodes of the first electrode layer **132***b* of the organic light emitting diode structure **130***b* of the embodiment are a plurality of first sensing series **135***b*, and the touch display panel **100***b* further includes a plurality of second sensing series **137***b*.

[0037] In specifically, the opposite substrate **120***b* has a first surface **122** and a second surface **124** opposite to the first surface **122**. The first sensing series **135***b* and the second sensing series **137***b* are located on the first surface **122** and the second surface **124** of the opposite substrate **120***b*, respectively. Herein, the first sensing series **135***b* extend along a first direction LP and the second sensing series **137***b* extend along a second direction L**2'**, wherein the first direction LF intersects the second direction L**2'**. As shown in FIG. **2**B, each of the first sensing series **135***b* includes a first stripe electrode, and each of the second sensing series **137***b* includes a second stripe electrode. It should be noted that the first sensing series **135***b* are used as the scan lines in display mode, and are also used as the driving lines in touch sensing mode, and the second sensing series **137***b* are used as sensing lines in touch sensing mode. Additionally, the touch display panel **100***b* further includes a protecting layer **190** which covers the second sensing series **137***b*, and the cover plate **160***a* is fixed onto the opposite substrate **120***b* through the adhesive layer **170**. Herein, the adhesive layer **170** encapsulates the protecting layer **190**.

[0038] It has to be mentioned that the structure of the first sensing series **135***b* and the second sensing series **137***b* is not limited in the present invention, although the first sensing series **135***b* are specified to be the first stripe electrodes and the second sensing series **137***b* are specified to be the second stripe electrodes in the embodiment. FIG. **2**C illustrates a top view of portions of the first sensing series and the second sensing series in FIG. **2**A according to another exemplary embodiment. For the sake of description convenience, the opposite substrate located between the first sensing series and the second sensing series is omitted in FIG. **2**C. Referring to FIG. **2**C, each of the first sensing series **135***c* includes a plurality of first sensing pads **138***a* and a plurality of first bridge lines **139***a* connecting the first sensing pads **138***a* in

series along the first direction L**1'**, and each of the second sensing series **137***c* includes a plurality of second sensing pads **138***b* and a plurality of second bridge lines **139***b* connecting the second sensing pads **138***b* in series along the second direction L**2'**. The aforementioned structure in the embodiment still belongs to a technical means adoptable in the present invention and falls within the protection scope of the present invention.

[0039] In the touch display panel **100***b* of the embodiment, the first sensing series **135***b* (or **135***c*) and the second sensing series **137***b* (or **137***c*) are located on the first surface **122** and the second surface **124** of the opposite substrate **120***b*, respectively. It means that only two substrates are necessary, i.e., the array substrate **110** and the opposite substrate **120***b*, and thus components for display function and components for touch sensing function are integrated. Therefore, under the condition of without significantly increasing the thickness of the touch display panel **100***b*, the touch display panel **100***b* of the present embodiment can have both touch sensing function and display function.

[0040] FIG. **3** schematically shows a cross-sectional view of a touch display panel according to another exemplary embodiment of the present invention. Referring to FIG. **3**, the touch display panel **100***c* of the embodiment is similar to the touch display panel **100***b* of FIG. **2**, and the difference is that: the disposing locations of the second sensing series **137***d* are different. Specifically, the second sensing series **137***d* of the embodiment are disposed on the cover plate **160***c* and located between the cover plate **160***c* and the opposite substrate **120***c*. Additionally, the touch display panel **100***c* further includes a protecting layer **195** which covers the second sensing series **137***d*, and the cover plate **160***c* is fixed onto the opposite substrate **120***c* through the adhesive layer **170**. The adhesive layer **170** encapsulates the protecting layer **195**. Herein, the second sensing series **137***d* are used as sensing lines in touch sensing mode, and the first sensing series **135***b* of the first electrode layer **132***b* (referring to FIG. **2**B) are not only used as the power source in display mode, but also be used as the driving lines in touch sensing mode.

[0041] In light of the foregoing, since the touch display panel of the present invention uses the organic light emitting diode structure to display and the first electrode layer of the organic light emitting diode structure can further used as touch sensing electrodes, an extra touch panel or an independent touch sensing electrode structure is not required to be additionally disposed, and the touch display panel of the present invention can have the functions of touch sensing and displaying. Therefore, the touch display panel of the present invention can effectively reduce the thickness and the weight, and the light transmittance can also be improved. In addition, since the first electrode layer and the touch sensing electrodes which are the displaying structures are formed in the same fabricating process, the fabricating process and the manufacturing cost can be effectively reduced and the circuit layouts can be simplified. Furthermore, the thickness of the touch display panel of the present invention is comparatively thinner, and thus can comply with the current trend of miniaturizing devices.

[0042] Although the invention has been described with reference to the above embodiments, it will be apparent to one of the ordinary skill in the art that modifications to the described embodiment may be made without departing from the spirit of the invention. Accordingly, the scope of the invention will be defined by the attached claims not by the above detailed descriptions.

What is claimed is:

1. A touch display panel, comprising:

an array substrate;

an opposite substrate located opposite to the array substrate;

an organic light emitting diode structure disposed on the opposite substrate and located between the array substrate and the opposite substrate, wherein the organic light emitting diode structure comprises:

a first electrode layer disposed on the opposite substrate and comprising a plurality of touch sensing electrodes;

an organic light emitting layer disposed on the first electrode layer; and

a second electrode layer disposed on the organic light emitting layer;

a plurality of conductive spacers disposed between the array substrate and the organic light emitting diode structure, wherein the second electrode layer of the organic light emitting diode structure is electrically connected to the array substrate via the conductive spacers; and

a sealant disposed between the array substrate and the opposite substrate for sealing the organic light emitting diode structure and the conductive spacers between the drive array substrate and the opposite substrate.

2. The touch display panel as claimed in claim **1**, wherein the touch sensing electrodes comprise a plurality of first sensing electrodes and a plurality of second sensing electrodes, the first sensing electrodes extend along a first direction, the second sensing electrodes extend along a second direction and are electrically insulated with the first sensing electrodes, the first direction is opposite to the second direction, a shape of each of the first sensing electrodes and a shape of each of the second sensing electrodes are ladder-shaped structures, and a shape of each of the first sensing electrodes and a shape of adjacent second sensing electrodes construct a rectangular structure.

3. The touch display panel as claimed in claim **1**, wherein the touch sensing electrodes comprise a plurality of first sensing series, the touch display panel further comprises a plurality of second sensing series, the opposite substrate has a first surface and a second surface opposite to the first surface, the first sensing series and the second sensing series are respectively located in the first surface and the second surface of the opposite substrate, the first sensing series extend along a first direction, the second sensing series extend along a second direction, and the first direction intersects the second direction.

4. The touch display panel as claimed in claim **3**, wherein each of the first sensing series comprises a first stripe electrode, and each of the second sensing series comprises a second stripe electrode.

5. The touch display panel as claimed in claim **3**, wherein each of the first sensing series comprises a plurality of first sensing pads and a plurality of first bridge lines connecting the first sensing pads in series along the first direction, each of the second sensing series comprises a plurality of second sensing pads and a plurality of second bridge lines connecting the second sensing pads in series along the second direction.

6. The touch display panel as claimed in claim **1**, further comprising:

a cover plate disposed on the opposite substrate; and

a plurality of second sensing series disposed on the cover plate and located between the cover plate and the opposite substrate, wherein the touch sensing electrodes of the first electrode layer of the organic light emitting diode structure are a plurality of first sensing series, the first sensing series extend along a first direction, the second sensing series extend along a second direction, and the first direction intersects the second direction.

7. The touch display panel as claimed in claim **6**, wherein each of the first sensing series comprises a first stripe electrode, and each of the second sensing series comprises a second stripe electrode.

8. The touch display panel as claimed in claim **6**, wherein each of the first sensing series comprises a plurality of first sensing pads and a plurality of first bridge lines connecting the first sensing pads in series along the first direction, each of the second sensing series comprises a plurality of second sensing pads and a plurality of second bridge lines connecting the second sensing pads in series along the second direction.

9. The touch display panel as claimed in claim **1**, further comprising:

a cover plate disposed on the opposite substrate, wherein the cover plate is fixed on the opposite substrate through an adhesive layer.

10. The touch display panel as claimed in claim **1**, further comprising:

a flexible circuit board disposed on the array substrate and electrically connected to the array substrate.

11. A touch display panel, comprising:

an array substrate;

an opposite substrate located opposite to the array substrate;

an organic light emitting diode structure disposed on the opposite substrate and located between the array substrate and the opposite substrate, wherein the organic light emitting diode structure comprises a plurality of touch sensing electrodes;

a plurality of conductive spacers disposed between the array substrate and the organic light emitting diode structure, wherein the organic light emitting diode structure is electrically connected to the array substrate via the conductive spacers; and

a sealant disposed between the array substrate and the opposite substrate.

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专利名称(译)	触摸显示面板		
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摘要(译)

一种触控显示面板，包括阵列基板，对向基板，有机发光二极管（OLED）结构，多个导电垫片和密封剂。 OLED结构设置在相对的基板上，并位于阵列基板和相对基板之间。 OLED结构包括顺序设置的第一电极层，有机发光层和第二电极层。第一电极层位于相对的基板上并包括多个触摸感应电极。第二电极层通过导电垫片与阵列基板电连接。密封剂将OLED结构和导电隔离物密封在阵列基板和相对基板之间。